**University of West Alabama**

**COE**

**5E Lesson Plan**

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| Teacher: Ms Hudnall  Date: 12/7/14  Subject area/course/grade level: Chemistry, 11th Grade  Materials: Periodic Table, Element Cards, Handouts, Internet Access, Colored Pencils, Rulers  Standards: Analyze data such as physical properties to explain periodic trends of the elements, including metal/nonmetal/metalloid behavior, electrical/heat conductivity, electronegativity, ionization energy and atomic radii, and how they relate to position in the periodic table.  Objectives: Students will be able to: 1)Explain the relationship between the number of valence electrons and patterns on the periodic table  2)Explain how physical and chemical properties relate to location on the periodic table  Differentiation Strategies: Peer tutoring, Flexible Grouping, Graphic Organizers, Online tutorials |

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| **ENGAGEMENT:**  Students will be given a set of 17 element cards designed in a way that shows similarities and differences. Students will work in groups of 4 to organize the cards in columns according to their similarities. Once students complete the arrangement of their cards, they will show the teacher and explain why they chose that arrangement based on what they knew about the periodic table. Students will be told that this lesson introduces how the elements are organized according to chemical properties and other trends they will learn about.  Assessment-Checking Card Arrangement |
| **EXPLORATION:**  Students will use their arrangement of the elements and complete a handout to help them analyze the similarities and differences about their cards. The guiding questions will address parts of the organization of the periodic table such as valence electrons, period, family and oxidation numbers. Once students answer the questions, they will have to figure out what element is missing from their arrangement. Students will then use the internet to watch a video about 13 different elements and have to fill out a descriptive graphic organizer. This graphic organizer introduces them to other trends of the periodic table such as atomic radius(size), electronegativity, ionization and reactivity. Students will record the observed information onto the graphic organizer as they watch the video.  Assessment-Checking Graphic Organizer |
| **EXPLANATION:**  Teacher will ask them to refer back to their original arrangement of the element cards they received while covering key terms related to organization of the periodic table. Students will be asked to discuss what they discovered about each of the trends from watching the videos and how it relates to the periodic table. Teacher will ask questions regarding what they observed from left to right in a row of the periodic table, from top to bottom or from right to left. This will ensure students understand that the elements are arranged due to decreasing or increasing characteristics. Students will answer questions using a Kahoot review.  Assessment-Kahoot |
| **ELABORATION:**  Students will have to create their own representation of the Periodic Table, in their groups, using their newly learned trends of organization. Students can choose to represent the trends in any way they choose. Students will be provided colored pencils, rulers and will have to create a key for what in their design represents each trend. They have seen the example from the element cards they received in the beginning. This will be completed in the form of a One-Pager and students will have to include certain components.  Assessment-One Pager guidelines |
| **EVALUATION:**  Students will have to work in groups of 4 to create a PowerPoint on the Periodic Table, including the history and the organization which was gained in this lesson. Students will be graded using a PowerPoint rubric and this will be their group assessment for Periodic Trends.  Summative Assessment-Group PowerPoint Project |

References:

Bybee, R.W. et al. (1989). *Science and technology education for the elementary years: Frameworks for curriculum and instruction.* Washington, D.C.: The National Center for Improving Instruction.

Bybee, R. W. (1997). *Achieving Scientific Literacy: From Purposes to Practices.* Oxford: Heinemann.

National Research Council. (1999). *Inquiry and the national science education standards: A guide for teaching and learning.* Washington, D.C.: National Academy Press.

Polman, J.L. (2000). *Designing project-based silence: Connecting learners through guided inquiry.* New York: Teachers College Press.